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### (54) WASHING NET

#### (57) Abstract:

PROBLEM TO BE SOLVED: To improve the ability to sink into a washing liquid and make shape retentive by composing a specified percentage of fibers forming a netty bag of a high specific gravity core sheath type conjugated fibers having a specified specific gravity in a washing net made of the netty bag having an openable portion from which the washing are put into or taken out.

SOLUTION: In a washing net made of a netty bag having an openable portion from which the washing are put in or out in a part thereof, 25 wt.% or more of fibers composing the netty bag is made a high specific gravity core- sheath type conjugated fibers having a specific gravity of 1.45 or higher. In addition, the specific gravity of the netty bag is 1.40 or higher. The core component of the high specific gravity core sheath type conjugated fibers is a synthetic resin containing 25 wt.% or higher specific gravity particles. The high specific gravity particles must be those of one or more picked out from the group consisting of barium, titanium, aluminum, iron, copper, tungsten, titanium dioxide, zinc oxide, barium sulfate and ferric oxide.

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CLAIMS

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[Claim(s)]

[Claim 1] A network for wash characterized by consisting of a reticulated bag body which has the closing motion section for taking the washing in and out of a part, and 25% of the weight or more of fiber which constitutes this reticulated bag body consisting of a with a specific gravity of 1.45 or more high-specific-gravity sheath-core mold bicomponent fiber.

[Claim 2] A network for wash according to claim 1 characterized by specific gravity of said reticulated bag body being 1.40 or more.

[Claim 3] A network for wash according to claim 1 or 2 characterized by said high-specific-gravity sheath-core mold bicomponent fiber using as a heart component synthetic resin which contains an high-specific-gravity particle 25% of the weight or more.

[Claim 4] A network for wash according to claim 1 to 3 characterized by being one or more sorts chosen from a group which said high-specific-gravity particle becomes from barium, titanium, aluminum, iron, copper, a tungsten, a titanium dioxide, a zinc oxide, a barium sulfate, and ferric oxide.

[Claim 5] A network for wash according to claim 1 to 4 characterized by synthetic resin which constitutes a heart component and a sheath component of said high-specific-gravity sheath-core mold bicomponent fiber being a polyester system polymer.

[Claim 6] A network for wash according to claim 1 to 5 whose synthetic resin which constitutes a sheath component synthetic resin which constitutes a heart component of said high-specific-gravity sheath-core mold bicomponent fiber is the polyester system polymer of the low melting point, and is characterized by being a high-melting polyester system polymer rather than said heart component.

[Claim 7] A network for wash according to claim 6 characterized by a polyester system polymer of the low melting point which constitutes a heart component of said high-specific-gravity sheath-core mold bicomponent fiber being a copolymerized polyester system polymer.

[Claim 8] A network for wash according to claim 1 to 7 characterized by reinforcement of said reticulated bag body being 4.4 or more g/d.

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## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] About the saccate network for wash used in order to contain the washing-ed and to present wash with a washing machine, in more detail, this invention excels [ high specific gravity ] in the sedimentation nature to wash liquid, and firmness is good, and cannot be easily twisted due to press of the stream in laundry sink, and it relates to the network for wash which can mitigate damage on the washing-ed.

[0002]

[Description of the Prior Art] The pain by wash of the underwear for women, a stocking, a thin blouse, etc. faced washing an intense washing-ed [ light weight ] especially, contained the washing-ed to the \*\*\*\* bag body generally called the network for wash, and supplies this in the laundry sink of a washing machine.

[0003] Although the variety proposal of what formed various designs as a saccate network for wash which formed the line of thread of the conventional natural fiber or a synthetic fiber in the shape of \*\*\*\* for carrying out and cutting is already made, in case the network for wash of these former contains and washes the washing-ed [ light weight ], by buoyancy, a network and the washing-ed need the wash time amount of long duration for it in order for a relief and the washing-ed not to sediment on the oil level of wash liquid in wash liquid but to reduce the effectiveness of wash on it. consequently they are fraying, mold collapse, and a fluff at the washing-ed -- it had the problem were easy to do damage on \*\* etc.

[0004] Moreover, since the network for wash into which the washing-ed was put deformed greatly and was twisted by press of the wash stream at the time of wash, it also had the problem of becoming the cause by which this does damage to the washing-ed.

[0005] In order to solve the above-mentioned problem, it is in JP.7-24716,B, Although the method of mitigating the twist and damage on the washing-ed by performing synthetic-resin coating to the network for wash, giving rigidity, and considering as the network for elastic wash is proposed Since the fall of the omission of synthetic-resin coating by long-term use and the flexibility of the network by coating itself is caused by this method, There was a problem of causing the rise of a processing cost from the complicatedness of about [ that what still satisfies the military requirement as a network for wash enough is not obtained ], and a coating production process.

[0006] Moreover, the thing for which a network is made into a double knit, the fiber configuration of table knitting fabric and a back fabric is further changed into JP.6-75633,B, and the waist and a flare strong against a network are given, Although the method of protecting the washing-ed was proposed, a result to which the complicatedness of the production process made into about [ being unable to be satisfied with this method of the sedimentation nature to wash liquid and the firmness of the network at the time of wash enough ] and a double knit invites the rise of a processing cost was brought.

[0007]

[Problem(s) to be Solved by the Invention] This invention is attained as a result of considering solution of the trouble which the conventional network for wash mentioned above has as a technical problem.

[0008] Therefore, the sedimentation nature to wash liquid is excellent in high specific gravity, firmness is good, and cannot be easily twisted due to press of the stream in laundry sink, and the technical problem of this invention is to offer the network for wash which can mitigate damage on the washing-ed.

[0009]

[Means for Solving the Problem] In order to attain the above-mentioned technical problem, a network for wash of this invention has the next configuration. That is, it is the network for wash characterized by consisting of a reticulated bag body which has the closing motion section for taking the washing in and out of a part, and 25% of the weight or more of fiber which constitutes this reticulated bag body consisting of a with a specific gravity of 1.45 or more high-specific-gravity sheath-core mold bicomponent fiber.

[0010] 25% of the weight or more of fiber from which a network for wash of this invention constitutes a reticulated bag body consists of a with a specific gravity of 1.45 or more high-specific-gravity sheath-core mold bicomponent fiber. Specific gravity of an high-specific-gravity sheath-core mold bicomponent fiber cannot make a network for wash sediment effectively into wash liquid less than by 1.45.

[0011] Moreover, said high-specific-gravity sheath-core mold bicomponent fiber occupies 25% of the weight or more of fiber which constitutes a reticulated bag body. When an high-specific-gravity sheath-core mold bicomponent fiber is less than 25% of the weight of fiber which constitutes a reticulated bag body, a network for wash cannot be made to sediment effectively into wash liquid. If said high-specific-gravity sheath-core mold bicomponent fiber is 25% of the weight or more of the range of fiber which constitutes a reticulated bag body, it is possible to interweave with a natural fiber, other synthetic fibers, etc., and to use in less than 75% of the weight of the range, with this high-specific-gravity sheath-core mold bicomponent fiber, but when interweaving, it is desirable to choose fiber with specific gravity high if possible, for example, polyester fiber etc.

[0012] Since a network for wash of this invention consists of a reticulated bag body of high specific gravity which used a with a specific gravity of 1.45 or more high-specific-gravity sheath-core mold bicomponent fiber as a part of configuration fiber [ at least ], sedimentation nature to wash liquid at the time of wash is excellent, and moreover, firmness is good, cannot be easily twisted due to press of a stream in laundry sink, and can mitigate damage on the washing-ed remarkably.

[0013] A network for wash of this invention consists of reticulated bag bodys which have the closing motion section for taking the washing-ed in and out in part. It is necessary to have the one or more closing motion sections for being unable to contain the washing-ed, unless it has a configuration of a body, and taking the washing-ed in and out in part, and a fastener, a piece of Velcro, a carbon button, etc. can be suitably chosen as a closing motion means of the closing motion section.

[0014] Furthermore, unless a reticulated bag body has the shape of a mesh, it cannot contact the washing-ed and wash liquid which were contained, and cannot acquire the wash effect. A configuration and magnitude of a mesh in a reticulated bag body can be suitably chosen according to magnitude of the washing-ed, inflow / fluid effectiveness of wash liquid, etc.

[0015]

[Embodiment of the Invention] Hereafter, the network for wash of this invention is further explained to details.

[0016] In addition, in the network for wash of this invention, the specific gravity of said reticulated bag body is 1.40 or more. It is characterized by using as a heart component the synthetic resin with which said high-specific-gravity sheath-core mold bicomponent fiber contains an high-specific-gravity particle 25% of the weight or more. Said Taka ratio baryon is one or more sorts chosen from the group which consists of barium, titanium, aluminum, iron, copper, a tungsten, a titanium dioxide, a zinc oxide, a barium sulfate, and ferric oxide. The synthetic resin which constitutes the heart component and sheath component of said high-specific-gravity sheath-core mold bicomponent fiber is a polyester system polymer. The synthetic resin which constitutes the heart component of said high-specific-gravity sheath-core mold bicomponent fiber is the polyester system polymer, especially copolymerized polyester

system polymer of the low melting point, and the synthetic resin which constitutes a sheath component is a high-melting polyester system polymer from said heart component, It is desirable conditions that the reinforcement of said reticulated bag body is 4.4 or more g/d etc., and the further excellent effect can be acquired by applying these conditions.

[0017] Moreover, the magnitude of a reticulated bag body, and the number and the configuration of the closing motion section can be suitably chosen with the magnitude of the washing-ed, the amount of receipt of laundry sink, etc.

[0018] although a pencil-like simple sheath-core compound die, a sea island-like sheath-core compound die, and the heart are mentioned for a non-circle-like sheath-core compound die etc. as a gestalt of the high-specific-gravity sheath-core mold bicomponent fiber used by this invention -- a mouthpiece -- the simple sheath-core compound die of the shape of points, such as the ease of manufacture and the stability of operation, to a pencil is the most desirable.

[0019] As for the specific gravity of said reticulated bag body, 1.40 or more are desirable, and 1.50 or more are still more desirable. The specific gravity of a reticulated bag body may be unable to be satisfied with 1.40 or less of sedimentation nature to the wash liquid of the network for wash made into the purpose of this invention.

[0020] As a method of making the specific gravity of an high-specific-gravity sheath-core mold bicomponent fiber 1.45 or more, 25% of the weight or more of the thing to do for the amount content of the high-specific-gravity particle is desirable to the synthetic resin which forms a heart component, and, as for the Taka ratio baryon used here, it is desirable that they are one or more sorts chosen from the group which consists of barium, titanium, aluminum, iron, copper, a tungsten, a titanium dioxide, a zinc oxide, a barium sulfate, and ferric oxide.

[0021] At 25 or less % of the weight, the specific gravity of an high-specific-gravity sheath-core mold bicomponent fiber may not be made as for the amount of the Taka ratio baryon which the synthetic resin which forms a heart component is made to contain to 1.45 or more.

[0022] Moreover, the amount of the Taka ratio baryon which a heart component is made to contain may be unable to acquire the firmness of the network for wash made into the purpose of this invention at less than 25 % of the weight. That is, the firmness of the network for wash originates in the flexibility of the fiber which constitutes a network, when the flexibility of fiber is low, the firmness of a network becomes high, and when the flexibility of fiber is high, the orientation for a network to become flexible and for firmness to become low is in reverse. And the content of the Taka ratio baryon in a heart component has big effect on the flexibility of an high-specific-gravity sheath-core mold bicomponent fiber. if an high-specific-gravity particle content is low, flexibility becomes high, and a content may be obtained only for the high high-specific-gravity sheath-core mold bicomponent fiber of flexibility at less than 25 % of the weight.

[0023] In addition, when the synthetic resin which forms a sheath component is made to contain an high-specific-gravity particle as a compound gestalt of fiber, it is not desirable from fault, like the particle exposed to omission and the fiber surface of a particle at the time of wash use contacts the washing-ed, and does damage being caused.

[0024] As for each the heart component synthetic resin of an high-specific-gravity sheath-core mold bicomponent fiber and sheath component synthetic resin which constitute the network for wash of this invention, consisting of a polyester system polymer is desirable, and it is still more desirable to form a heart component by the copolymerized polyester system polymer. That is, a copolymerized polyester polymer is formed into the low melting point, so that it is the low melting point and a copolymerization ratio becomes high from the usual polyester system polymer. With the extension stress in an extension production process, the heart component containing a lot of Taka ratio baryons forms the letter void of a crack in the interface of a polymer and the Taka ratio baryon, and may reduce specific gravity. Then, while extension heat protects void formation of height and the letter of a crack for the fluidity of a heart component polymer by if possible using the polymer of the low melting point for a heart component, by carrying out melting of the heart component polymer, and making it gather with the surface tension of a void, the magnitude of an ellipse-like void, and the nothing [ whole ] and a whole void can be decreased.

and an increase in specific gravity of the void of the generated letter of a crack can be carried out.

[0025] The wash network of this invention can also be dyed a favorite color, and can use the dyeing conditions of the conventional polyester \*\* as dyeing conditions.

[0026] Moreover, it can also consider as a coloring wash network by adding a pigment in a heart component polymer and/or a sheath component polymer in a spinning phase, and obtaining the high-specific-gravity sheath-core compound-die fiber of the arrival at Hara.

[0027] It faces manufacturing a reticulated bag body using high-specific-gravity sheath-core compound-die fiber, and usual \*\*\*\* or usual organization conditions can be applied, for example, the reticulated bag body of \*\*\*\*\* edited by rales is formed.

[0028] As for the network for wash of this invention, it is desirable for it to be equal to use of a repeat and to make reinforcement of a reticulated bag body into 4.4 or more g/d for that purpose.

[0029] As a usage of the network for wash of this invention, it may not fix, but it may supply, and you may use for the interior of the laundry sink of a washing machine, and may fix and use for the interior of the laundry sink of a washing machine.

[0030]

[Example] Hereafter, an example explains this invention to details. In addition, the physical properties in an example were measured by the following method.

[0031] It measured using the [specific gravity] pycnometer.

[0032] After leaving a sample [on the strength] in the \*\* tone room of 20 degrees C and 65%RT for 24 hours or more, in quest of the SS curve, reinforcement and ductility were computed using the tensilon tension tester made from Cage En Tech by part for 30cm/in 25cm of trial length, and taking over speed.

[0033] It is in the condition which contained 20 stockings for women with the network for wash with a magnitude [ in which the [sedimentation nature to wash liquid] fastener closing motion section was formed ] of 35x35cm, and closed the fastener with it. It supplied in the wash liquid filled in the washing machine with a laundry sink capacity of 10l., when it washed on conditions (washing time amount 10 minute x1 time / rinse time amount 5 minute x4 time), visual evaluation of the sedimentation nature to the wash liquid of the network for wash which contained the stocking was carried out, and it classified into the following three criteria.

O .... \*\* to which a settling time is quick and does not come floating to the wash liquid surface .. x which cannot sediment easily and sometimes comes floating to the wash liquid surface .. It hardly sedimented but has always come floating to the wash liquid surface.

[0034] Visual evaluation was carried out at coincidence and the degree of deformation of the network for wash which contained the stocking at the time of the [twist | at the time of wash ] (firmness)] above-mentioned sedimentation nature evaluation was classified into the following three criteria.

O .... \*\* which is hardly twisted and does not deform .. x which repeats twist deformation and an original-form return frequently .. While it had once been twisted, an original-form return is not carried out.

[0035] The polyethylene terephthalate / isophthalate copolymer (PET/I) which made the rate of copolymerization of isophthalic acid ten-mol % by examples 1-4 and the [examples 1-3 of comparison] limiting viscosity 0.66 are produced, and it is an high-specific-gravity particle to the desiccation chip. After carrying out melting kneading with a biaxial extruder, carrying out addition mixing with the loadings mean particle diameter indicated the precipitated barium sulphate of 4.13 to 0.7 micrometers, and specific gravity indicated it to be to a table 1, from the mouthpiece of 3.0mmphi, discharge and after cooling, it cut, and the polymer chip used as a heart component was obtained. Furthermore, this chip for heart components was dried with the rotating type vacuum dryer with a temperature of 110 degrees C for 12 hours or more, and the moisture regain of a chip was made into 0.004% or less. The limiting viscosity of this chip for heart components was 0.60-0.62.

[0036] On the other hand, as polyester used as a sheath component, the polyethylene terephthalate (PET) chip of limiting viscosity 1.30 and 0.003% or less of moisture regain obtained by the solid state polymerization of a conventional method was prepared.

[0037] After fusing the polymer for the heart and sheath components with a separate extruder mold

spinning machine, it led into the compound spinning pack, and spinning was carried out so that it might become a concentric circle mold bicomponent fiber from a sheath-core compound spinneret. The heart / sheath compound ratio was changed as shown in a table 1. Moreover, the polymer for heart components was 250 degrees C, melting of the polymer for sheath components was carried out at 290 degrees C, respectively, and it carried out spinning with the compound spinning pack heated at 290 degrees C.

[0038] a spinneret -- annular 2 \*\*\*\*\* -- it is -- aperture 0.8mmphi and a hole -- a number -- 18 holes -- it is -- a mouthpiece -- in directly under, the 30cm heating cylinder was heated so that it might become 320 degrees C about installation and the ambient temperature in a cylinder. the ambient temperature in a cylinder -- a mouthpiece -- it measured in the location which is a location under 10cm and was separated from the field 1cm from the outermost periphery line of thread.

[0039] the bottom of a heating cylinder -- an annular mold vapour chimney with a length of 40cm -- the perimeter of installation and a line of thread -- 25 degrees C -- 40m cold blast for /-- a line of thread -- a right angle -- blasting -- it cooled. Subsequently, after giving oils and controlling line-of-thread speed by the taking over roller for 570m/, it extended continuously, without once rolling round.

[0040] With three pairs of Nelson mold rollers, after extending two steps of extensions by one 1.5 times the 2nd step scale factor [ the 3.5 times as many 1st step draw magnification as this and ] of this, they gave and rolled round 3% of relaxation between the following Nelson rollers.

[0041] Taking over roller temperature was made into 130 degrees C, the 1st step of extension was performed between a taking over roller and the 1st draw roller heated at 170 degrees C, and the 2nd step of extension was performed between the 1st draw roller and the 2nd draw roller heated at 240 degrees C. The following Nelson roller was used as un-heating. 70% of all draw magnification, one-step draw magnification extended the remainder in the 2nd step. and it adjusted polymer discharge quantity so that the total fineness of extension thread might serve as a desired denier.

[0042] The material which interwove the high-specific-gravity sheath-core mold bicomponent fiber obtained in this way and commercial polyester multifilament by the weight ratio shown in a table 1 was made with the \*\*\*\*\* layer structure mesh-like bag body of 5mm of openings which have the leg and a pars tuberalis edited by rales.

[0043] Although it may be two or more layer structure more than a bilayer if a wash network may be structure further, by this example, further, about the structure mesh-like bag body, the sedimentation nature to the specific gravity at the time of considering as the network for wash, reinforcement, and wash liquid and the twist nature at the time of wash were evaluated, and the result was collectively shown in a table 1.

[0044]

[A table 1]



	実施例 1	実施例 2	実施例 3	実施例 4	比較例 1	比較例 2	比較例 3
芯ポリマの粒子含有量 重量%	50	50	60	65	50	50	—
芯鞘複合比率 (芯/鞘) 重量%	50/50	50/50	50/50	40/60	40/60	50/50	—
芯鞘複合糸粒子含有量 重量%	25	25	30	40	20	25	—
芯鞘複合糸の比重	1.45	1.45	1.50	1.65	1.40	1.45	—
市販ポリエステルの比重	1.38	1.38	1.38	1.38	1.38	1.38	1.38
混雑比率 (芯鞘複合/純ポリエステル) 重量%	25/75	100/0	100/0	25/75	100/0	20/80	0/100
洗濯ネットの比重	1.41	1.45	1.50	1.45	1.40	1.39	1.38
洗濯ネットの強度 g/d	7.0	5.2	4.8	7.3	5.6	7.5	7.9
洗濯液への沈降性	○	○	○	○	△	×	×
洗濯時の振れ性 (保形性)	○	○	○	○	×	△	×

Specific gravity satisfies 1.4 or more, reinforcement satisfies 4.4 g/d, and each network for wash of examples 1-4 which fulfills the conditions of this invention is excellent also in the sedimentation nature to wash liquid, and the twist nature at the time of wash so that clearly from the result of a table 1.

[0045] On the other hand, in the low example 1 of a comparison of a receiving-whole fiber particle content, since the specific gravity of a sheath-core mold bicomponent fiber is low and the specific gravity of the network for wash also has it, the sedimentation nature to wash liquid and the twist nature at the time of wash are inferior. [ low ]

[0046] Moreover, although the specific gravity of a sheath-core mold bicomponent fiber is satisfied, since it cannot be satisfied with the example 2 of a comparison with the low rate of interweaving with fiber other than a sheath-core mold bicomponent fiber of the specific gravity as a network for wash, the sedimentation nature to wash liquid and the twist nature at the time of wash are inferior.

[0047] In addition, although the example 3 of a comparison is considered as the network for wash only using commercial polyester fiber, sake, the sedimentation nature to wash liquid and the twist nature at the time of wash are extremely inferior [ it has come to satisfy specific gravity ].

[0048]

[Effect of the Invention] As explained above, since the network for wash of this invention excels [ high specific gravity ] in the sedimentation nature to the wash liquid at the time of wash, and has high intensity and is [ it is excellent also in endurance and / that it is further hard to be twisted by press of a wash stream ] excellent in firmness, it can mitigate damage on the washing-ed.

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[Translation done.]